Industry & Logistics Solutions

BUSINESS SOLUTIONS

100% Identification Technology

KATHREIN

KATHREIN

Who we are and **what** we stand for

Kathrein is a leading international specialist for reliable, high-quality communication technologies.

We are an innovation and technology leader in today's connected world. Our ability to provide solutions and services enables people all over the world to communicate, access information and use media, whether at home, at the office or on the road.

We cover a broad spectrum: from mobile communication and RFID solutions, to satellite reception, broadband and broadcast technology, to transmission and reception systems in vehicles.

As a hidden champion and family-owned enterprise, we have been working on the technologies of tomorrow since 1919. We take pride in our dedicated employees and our passion for customers and quality.

Our Solutions

- BUSINESS SOLUTIONS
- MOBILE COMMUNICATION
- SAT
- BROADBAND
- BROADCAST
- AUTOMOTIVE

Find out more about us at **www.kathrein.com**

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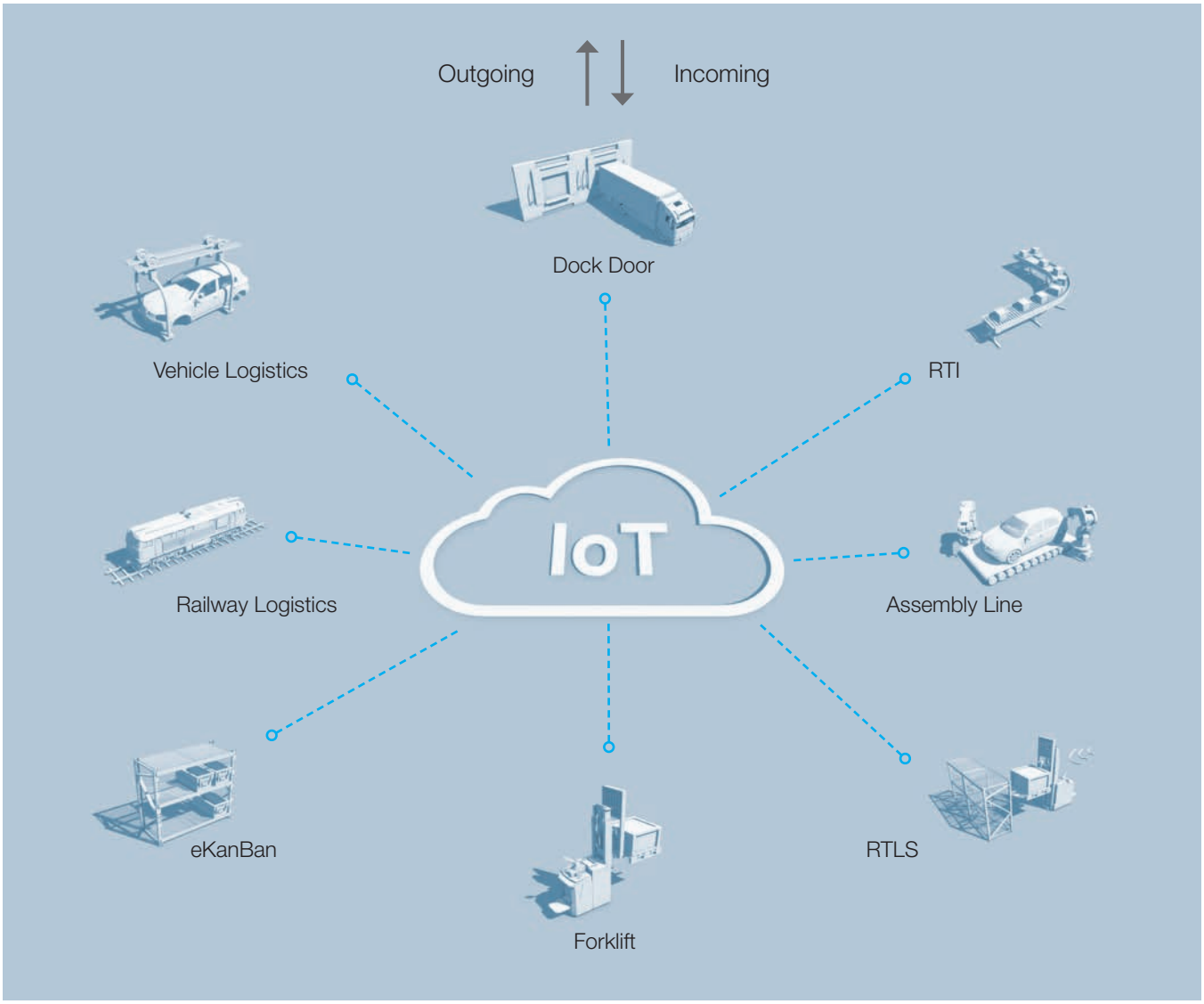
Introduction

Industrial Internet of Things

IIoT* incorporates big data technology, utilising sensor data, machine-to-machine (M2M) communication and technologies for industrial automation. Smart devices are more efficient than humans when it comes to capturing and communicating data accurately and consistently. This data can enable companies to save resources and support business intelligence efforts. Particularly in manufacturing environments, IIoT holds comprehensive potential for quality control, sustainability, supply chain traceability and efficiency. IoT** offers innovative opportunities to create solutions that connect digital and physical components as well as services and support.

*) IIoT = Industrial Internet of Things **) IoT = Internet of Things



IoT Solutions and Scenarios

Dock Door
- Supply Chain Management
- Incoming Goods
- Outgoing Goods

Returnable Transport Items
- Stock Management
- Track and Trace
- Sorting

Assembly Line
- Track and Trace
- Lean Production
- Quality Control

Real-time Location System
- Track and Trace
- Stock Management
- Security

Forklift
- Mobile Reader Application
- Stock Management
- RTI* Management

*) RTI = Returnable Transport Items

eKanBan
- Live Stock Management
- Lean Material Handling
- Quality Management

Railway Logistics
- Supply Device Management
- Fleet Management
- Maintenance

Vehicle Logistics
- Supply Chain Management
- Quality Management
- Prototype

Service & Support

We provide you with reliable support in implementing your project according to the very highest quality standards.

www.kathrein-solutions.com

Solution Overview

Solution Landscape

	Software	Hardware								
Application	**Cross Talk**	**RRU Series**	**ARU-CSB Series**	**ARU Series**	**M-ARU Series**	**RUH-ACD-M260**	**WIRA 30°/70°**	**MIRA**	**SMSH**	**RTLS**
Dock Door	✓	✓	✓				✓			
Returnable Transport Items	✓	✓	✓					✓		
Assembly Line	✓			✓						
Real-time Location	✓				✓					✓
Forklift	✓			✓		✓				
eKanBan	✓	✓							✓	
Railway Logistics	✓			✓						
Vehicle Logistics	✓		✓							

Next Generation of RFID/IoT Systems

The 3rd generation of RRU and ARU UHF RFID readers set a new benchmark for IoT systems and connectivity. With the high degree of versatility of the communication modules, the systems enable IoT applications to be integrated easily and seamlessly into existing IoT landscapes, without huge efforts for the infrastructure. To meet all requirements of Industry 4.0, the systems have highly efficient, integrated, multicore, industrial PCs (iPCs) to process applications, filter algorithms for data mining and business events directly on the device.

- Exceptional performance
- Integrated multicore iPC
- Advanced integrated visualisation
- Optional communication modules
- Efficient & seamless design

Hardware Overview

RRU Series

ARU-CSB Series (Integrated Antenna)

ARU Series (Integrated Antenna)

M-ARU Series (Integrated Antenna)

UHF Mobile Terminal

Wide Range Antenna 30°/70°

Mid Range Antenna 100°

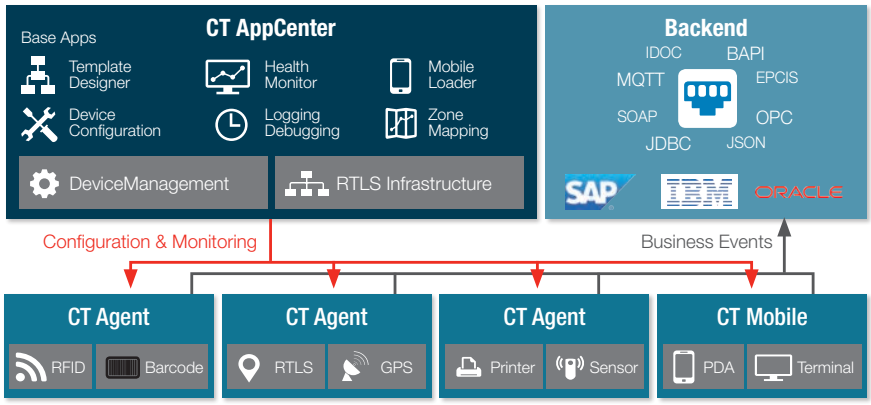
Smart Shelf Antenna

Software Solution

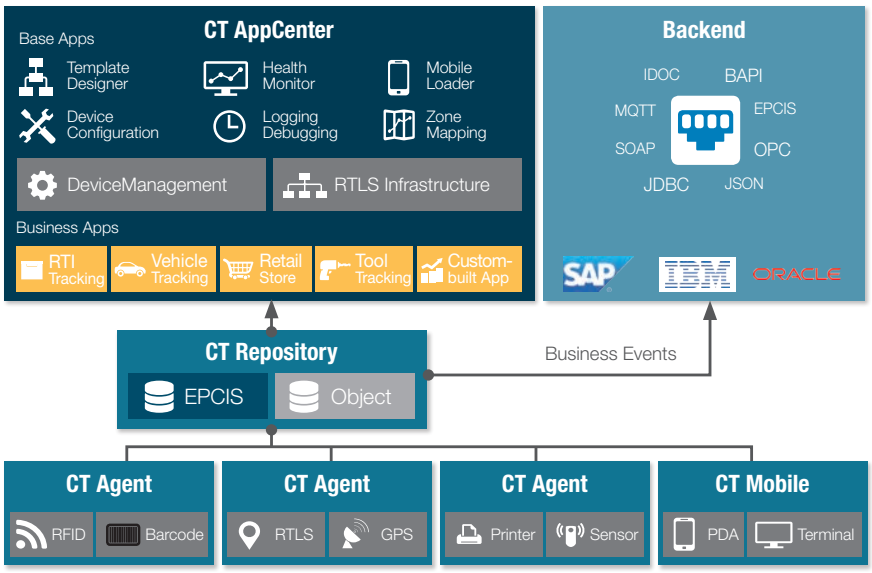
CrossTalk (CT) 3.0 IoT-Suite

- CrossTalk is the most advanced software suite for AutoID and IoT device management and Track & Trace visualisation
- CrossTalk DeviceManagement delivers plug and play integration for most of the AutoID devices and backend systems on the market. It allows a mix of technologies from major RFID/AutoID, RTLS, barcode and sensor providers
- CrossTalk AppCenter provides many visual Track & Trace applications out of the box. CrossTalk's highly configurable, modular and customisable approach fits into any customer scenario

CrossTalk Base Platform



Cross Talk Full Platform



BASE PLATFORM

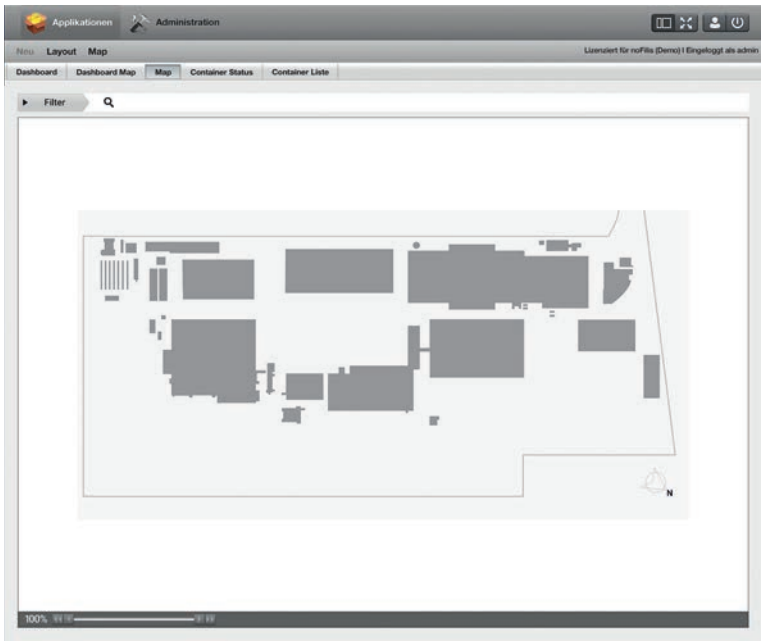
- DeviceManagement
- RTLS Infrastructure
- Backend Integration
- CrossTalk Agents (plug and play device integration, real-time data capturing, event processing, intelligent filtering)

FULL PLATFORM

- CrossTalk Base Functions
- CrossTalk AppCenter (custom apps, business apps)
- CrossTalk Repository (highly scalable data storage, distribution platform, EPCIS compatible)
- Event Distribution Platform

CrossTalk – RTLS Infrastructure

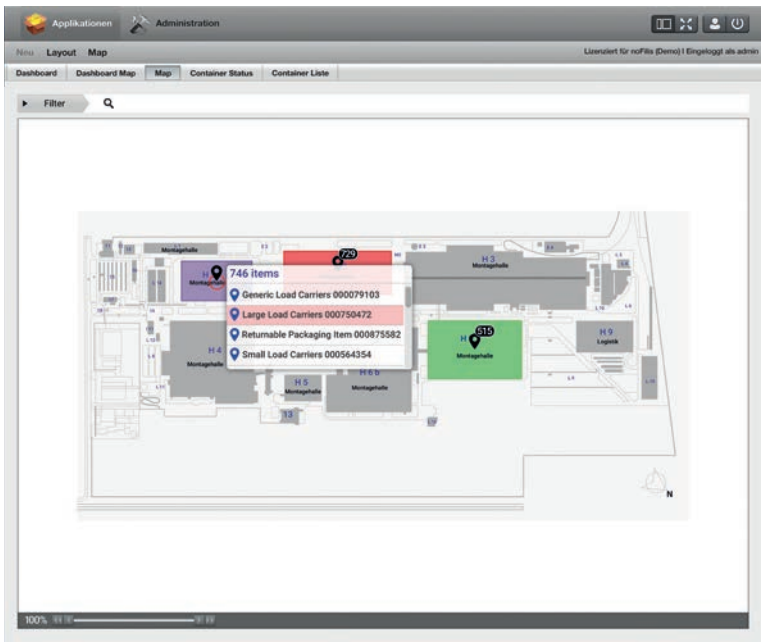
Visual Designer



DETAILS

- Build any location hierarchy using plant, site, area and zone elements
- Visualise objects in geo-based and layout-based maps
- Binding link between physical devices and business logic

Layout Map View



DETAILS

- Define zone border tolerance and fencing to prevent zone swapping
- Determination of sequences (A→B→C)
- Track & Trace
- Visual location editor to load and calibrate maps, draw and move zones
- Handle localisation events from active/passive RFID and RTLS systems, bar-codes, GPS tags and vehicle positioning
- Define fixed read points as positioning markers and gate movements
- Forward logical localisation results as business events to other apps or backend systems

Identifying the Right Solution

Dock Door Overhead

DETAILS

1. Core Application
- Medium tag density
- Limited installation space

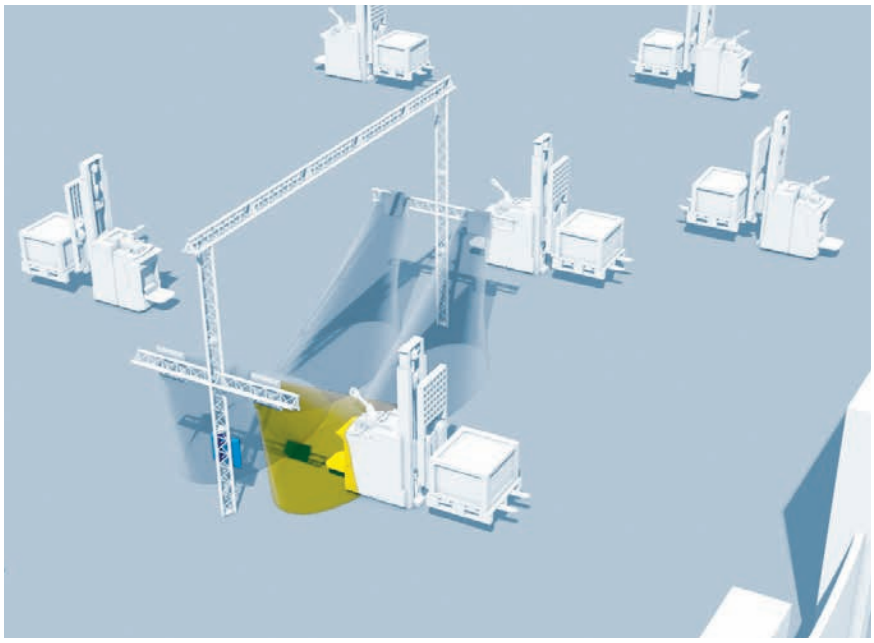
2. Features
- Integrated antenna design
- Circular switch beams
- Configurable read zone
- Direction detection
- Low installation cost
- False positive read filtering
- ©KRAI technology

3. Hardware
- ARU-CSB

4. Software
- CrossTalk

5. Interfaces
- PoE, Wi-Fi, 2G/3G

Dock Door Gate



DETAILS

1. Core Application
- High tag density
- Reduced tag performance

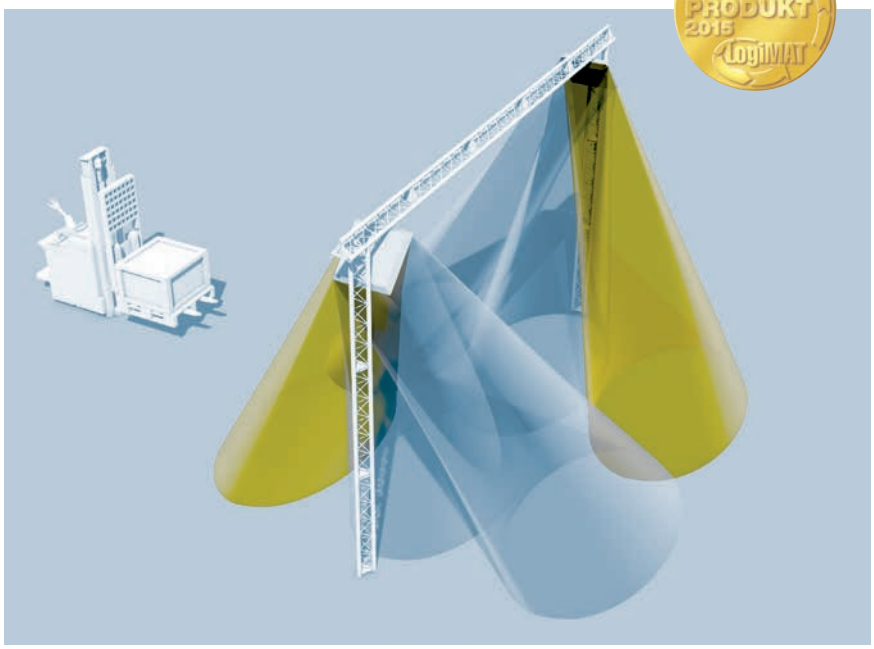
2. Features
- High speed identification
- Direction detection
- False positive read filtering
- ©KRAI technology

3. Hardware
- RRU, WIRA 30°/70°

4. Software
- CrossTalk

5. Interfaces
- PoE, Wi-Fi, 2G/3G

Returnable Transport Items Gate



DETAILS

1. Core Application
- High tag density
- Limited installation space

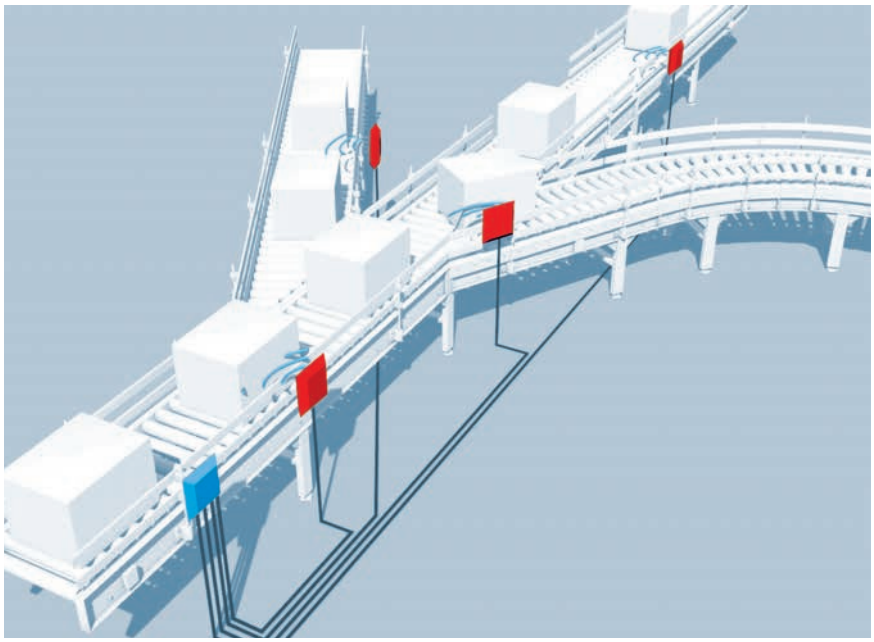
2. Features
- Integrated antenna design
- Circular switch beams
- Configurable read zone
- Direction detection
- Low installation cost
- False positive read filtering
- ©KRAI technology

3. Hardware
- ARU-CSB

4. Software
- CrossTalk

5. Interfaces
- PoE, Wi-Fi, 2G/3G

Returnable Transport Items Sorting



DETAILS

1. Core Application
- High speed identification
- Reduced tag performance

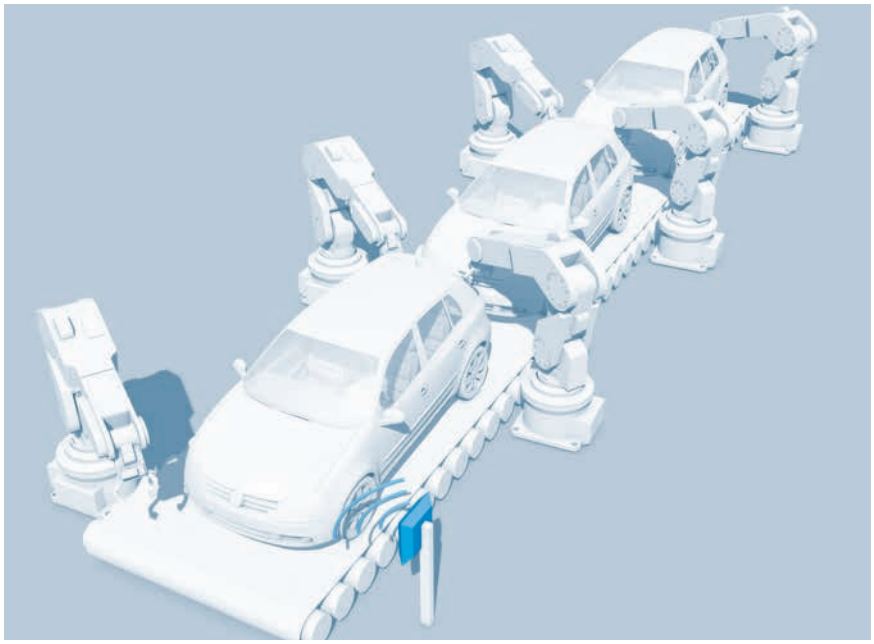
2. Features
- High speed identification
- Selective read zones
- ProfiNET integration
- Dense reader environment
- ©KRAI technology

3. Hardware
- RRU and MIRA
- Optional M-ARU

4. Software
- CrossTalk

5. Interfaces
- PoE, Wi-Fi, 2G/3G

Assembly Line



DETAILS

1. Core Application
- Complex tag orientation
- Reflective environment

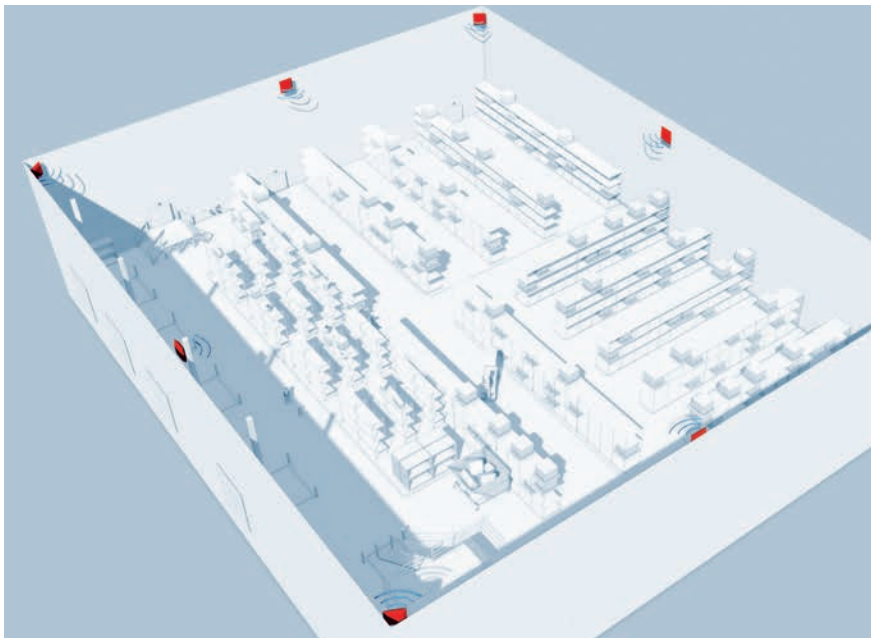
2. Features
- Selective read zones
- Polarisation switch
- ProfiNET integration
- ©KRAI technology

3. Hardware
- ARU

4. Software
- CrossTalk

5. Interfaces
- PoE, Wi-Fi, 2G/3G

Real-time Locating Systems



DETAILS

1. Core Application
- Item localisation
- Indoor/outdoor

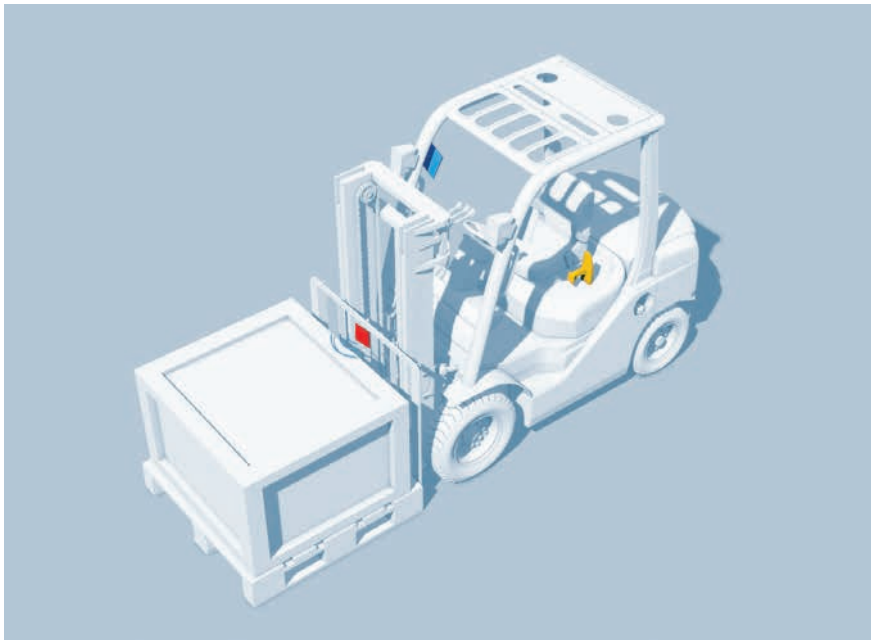
2. Features
- High accuracy
- Real-time location
- ProfiNET integration
- ©KRAI technology

3. Hardware
- RTLS system

4. Software
- CrossTalk

5. Interfaces
- PoE, Wi-Fi, 2G/3G

Forklift



DETAILS

1. Core Application
- Mobile application
- Forklift terminal
- Yard management

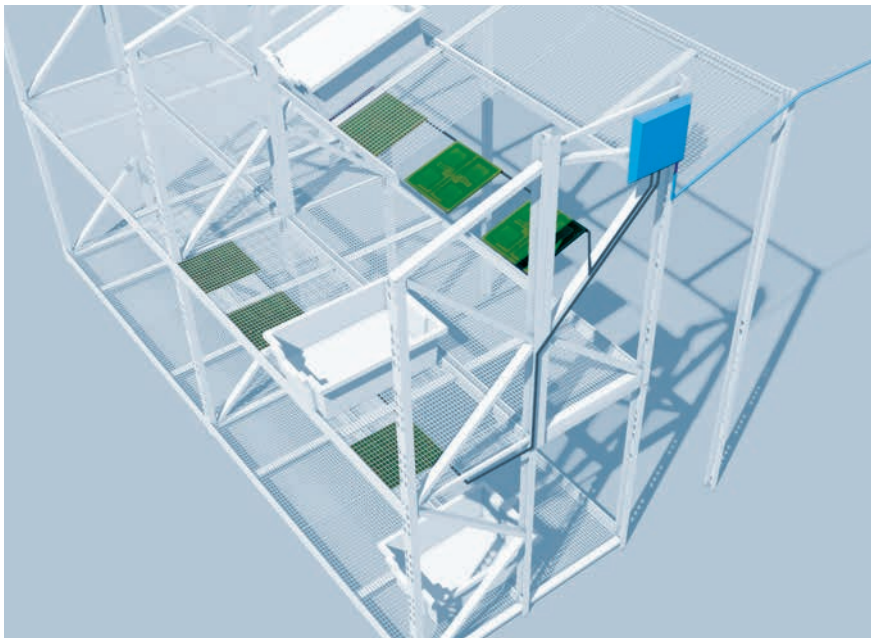
2. Features
- Warehouse management
- Manufacturing logistics
- Mobile read point
- Optional mobile terminal
- ©KRAI technology

3. Hardware
- ARU, M-ARU
- RUH-ACD-M260

4. Software
- CrossTalk

5. Interfaces
- PoE, Wi-Fi, 2G/3G

eKanBan



DETAILS

1. Core Application
- KanBan
- Workplace monitoring
- Point of sale
- Retail

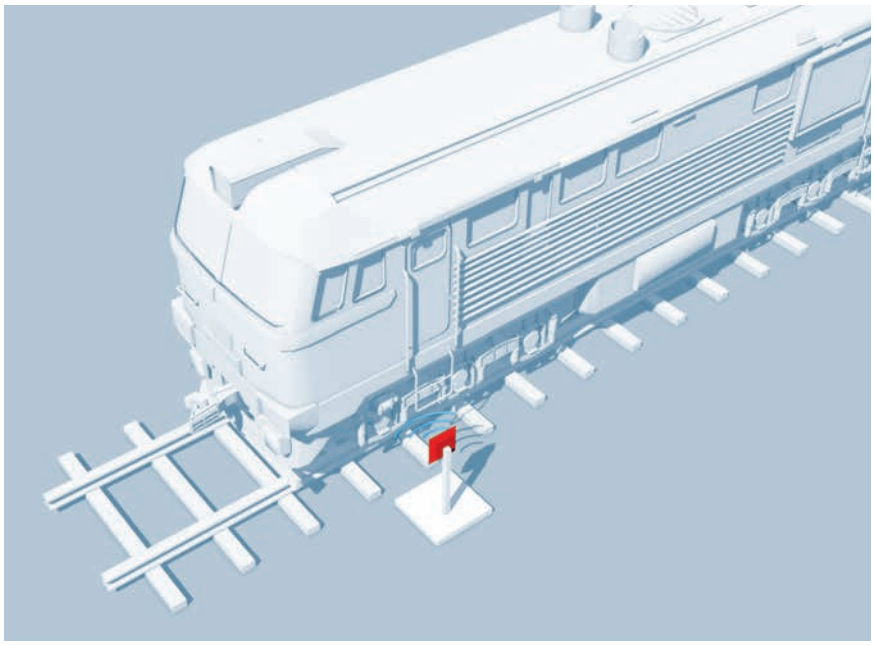
2. Features
- Selective read zones
- Up to 32 antennas per reader
- Cascadable
- Limited installation space
- ©KRAI technology
- No shielding needed

3. Hardware
- RRU, smart shelf antennas

4. Software
- CrossTalk

5. Interfaces
- PoE, Wi-Fi, 2G/3G

Railway Logistics



DETAILS

1. Core Application
- Vehicle localisation
- Maintenance optimisation

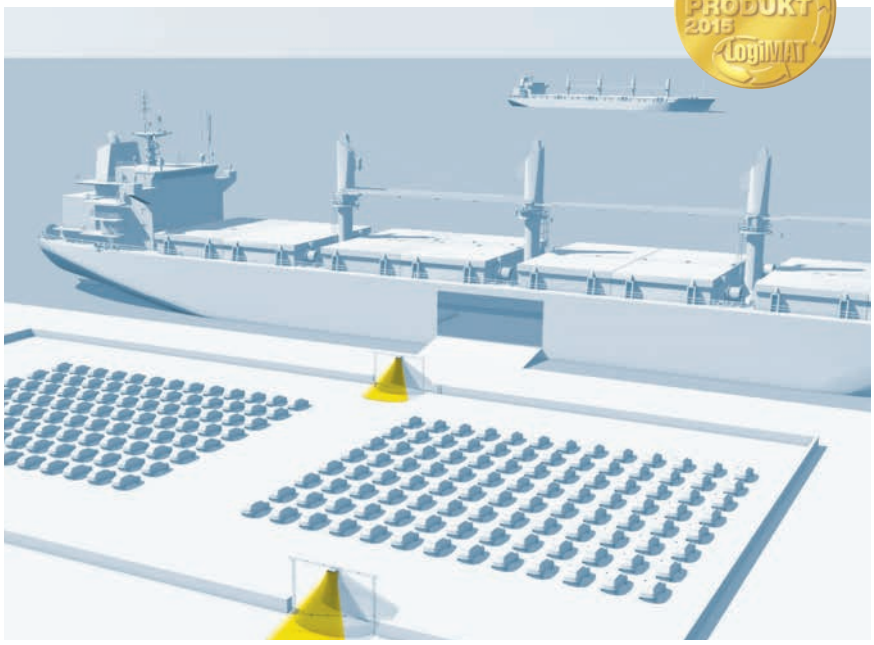
2. Features
- High speed identification
- Direction detection
- Traceability
- Localisation
- ©KRAI technology

3. Hardware
- RRU and WIRA 70°
- ARU

4. Software
- CrossTalk

5. Interfaces
- PoE, Wi-Fi, 2G/3G

Vehicle Logistics



DETAILS

1. Core Application
- Vehicle localisation
- Stock management

2. Features
- Integrated antenna design
- Circular switch beams
- Configurable read zone
- Direction detection
- Low installation cost
- Robust performance
- Outdoor proven
- ©KRAI technology

3. Hardware
- ARU-CSB

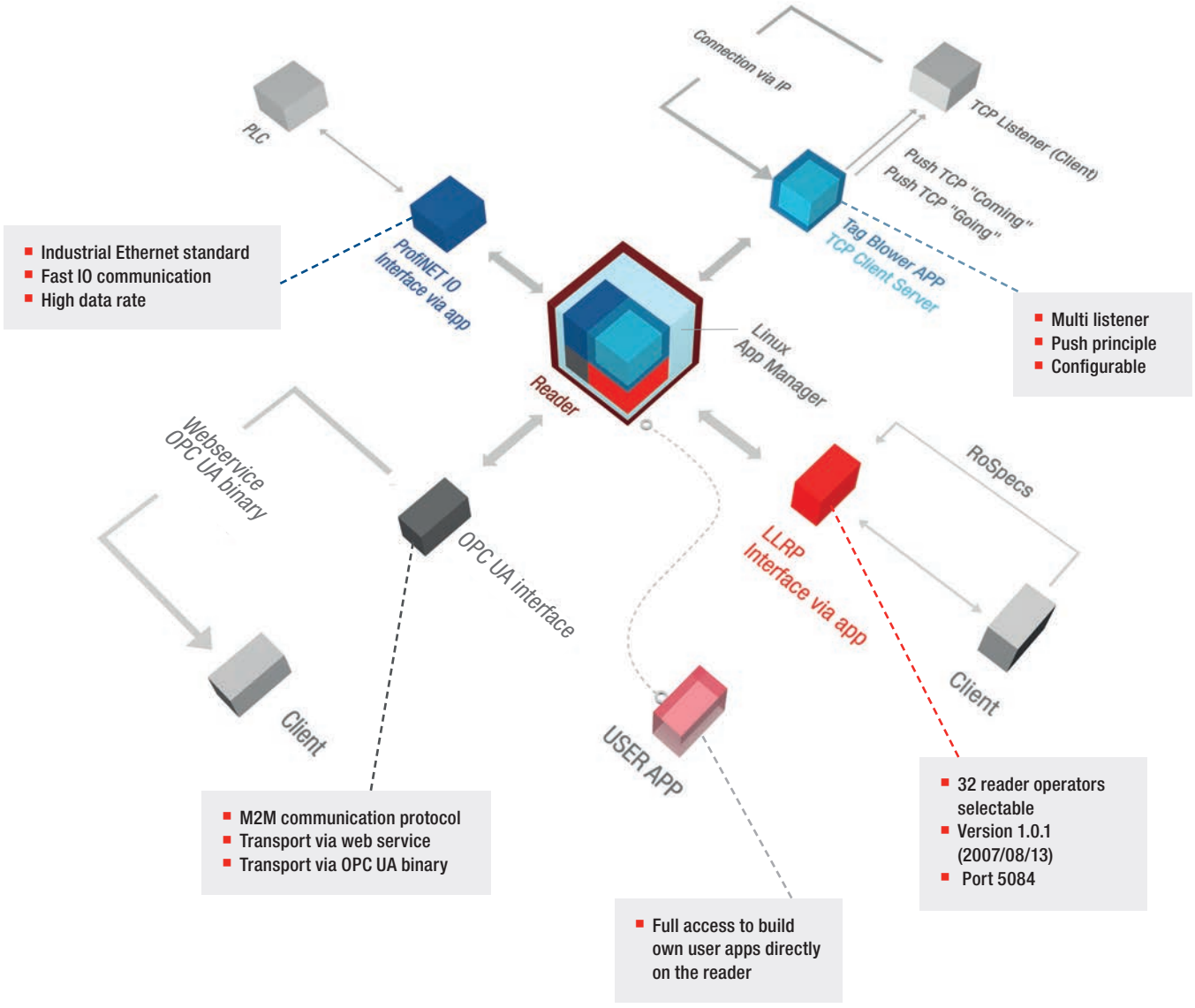
4. Software
- CrossTalk

5. Interfaces
- PoE, Wi-Fi, 2G/3G

Connectivity

Interface/App Overview

Based on the embedded Linux OS, every RRU/ARU reader offers the possibility for different interfaces. ProfiNET, TagBlower and LLRP modules are available in the Kathrein download area. OPC UA is part of the CrossTalk integration layer. In addition, Kathrein offers full access for custom applications that can also be installed directly on the reader.



References

Best Product LogiMAT 2015

The winner in the category “Identification, packing, loading, securing loads” for the revolutionary AutoID system ARU-CSB-ELC, with automatic detection of direction.

By applying a good idea and a good concept, we could win in the category “Identification, packing, loading, securing loads” and got the prize for “Best Product LogiMAT 2015”. The ARU-CSB RFID system enables for the first time a fully automatic detection of moving goods in the fields of industry and logistics. This provides the user with an adaptive RFID system which transmits not only the product data but also the direction of the moved goods by using three selective reading zones.

Best Product LogiMAT 2015
in the category “Identification, packing, loading, securing loads”

The ARU-CSB reader identifies and locates moving goods

Frost & Sullivan Award 2016

The winner in the category “2016 European RFID in Logistics Product Line Strategy Leadership Award”.

Based on its recent analysis of the radio-frequency identification (RFID) market for logistics, Frost & Sullivan recognised Kathrein RFID with the 2016 European RFID Award for Product Line Strategy. Kathrein’s ultra-high frequency (UHF) RFID technology product portfolio, targeted at end users ranging from commercial to industrial, enables end-to-end tracking in the logistics market. With the strategic acquisition of the software vendor noFilis, Kathrein RFID evolved from a hardware vendor to a complete solutions provider.

Kathrein RFID’s comprehensive product range is based on the unique Kathrein RFID antenna interface ©KRAI. The company introduced ©KRAI with the aim of enhancing the read range in dense transponder and reflective environments, facilitating the integration of RFID systems, and reducing costs.

FROST & SULLIVAN

2016 BEST PRACTICES AWARD

EUROPEAN RFID IN LOGISTICS PRODUCT LINE STRATEGY LEADERSHIP AWARD

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